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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/772,115

01/26/2001

Eric Lee

IDT-1641

8988

27158

7590

12/30/2002

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EXAMINER

OWENS, DOUGLAS W

ART UNIT

PAPER NUMBER

2811

DATE MAILED: 12/30/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/772,115

Applicant(s)

LEE ET AL.

Examiner

Douglas W Owens

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 19-38 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 19-38 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 8, 2002 has been entered.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 21-25 and 33-38 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 24 recites the limitation, "...wherein the semiconductor region comprises an implanted semiconductor layer." The scope of the claim is vague, since it is not known if the claim is intended to mean that the dispersed semiconductor region is implanted with some type of dopant, or if the dispersed semiconductor region is itself implanted.

5. While applicant may be his or her own lexicographer, a term in a claim may not be given a meaning repugnant to the usual meaning of that term. See *In re Hill*, 161 F.2d 367, 73 USPQ 482 (CCPA 1947). The term "...semiconductor region *dispersed*..."

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(emphasis added) in claim 21 is used by the claim to mean "semiconductor atoms implanted...", while the accepted meaning is "scattered or evenly distributed."

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 19, 21, 23, 26-30 and 33-36 are rejected under 35 U.S.C. 102(b) as being anticipated by US patent No. 5,387,535 to Wilmsmeyer.

Regarding claims 19 and 21, Wilmsmeyer teaches a semiconductor structure (Fig. 11) comprising:

- a semiconductor substrate (1);
- a conductive element (7) located over the substrate;
- a dielectric spacer (6) adjacent the sidewall of the conductive element;
- a semiconductor region scattered in the upper surfaces of the conductive element; and

a continuous silicide strap (10, 101) directly contacting the conductive element, the dielectric spacer and the semiconductor substrate.

Regarding claims 26 and 33, Wilmsmeyer teaches a semiconductor structure, wherein the silicide strap comprises a refractory metal layer (4, 41) reacted with semiconductor material (5, 51). Wilmsmeyer does not teach that the semiconductor material is in the conductive element. This is considered a product-by-process limitation. "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-

process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Regarding claims 23 and 27, Wilmsmeyer teaches a semiconductor structure, wherein the semiconductor material comprises amorphous silicon (Col. 2, lines 48-50; Col. 3, lines 19-21).

Regarding claims 28 and 34, Wilmsmeyer teaches a semiconductor structure, wherein the conductive element is a gate electrode.

Regarding claims 29 and 35, Wilmsmeyer teaches a semiconductor structure, further comprising a gate dielectric (22).

Regarding claims 30 and 36, Wilmsmeyer teaches a semiconductor structure, further comprising a source/drain region (31, 32), wherein the silicide strap contacts the source/drain region.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 20, 22, 24, 25, 31, 32, 37 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilmsmeyer.

Regarding claims 31 and 37, Wilmsmeyer does not explicitly teach a dielectric spacer comprising silicon oxide or silicon nitride. Wilmsmeyer is silent with respect to

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the material that is selected for the spacers. It would have been obvious to one of ordinary skill in the art to select silicon oxide or silicon nitride since they are known materials that are well suited for the intended use.

Regarding claims 32 and 38, Wilmsmeyer teaches a semiconductor structure, wherein the silicide strap comprises a silicide made from a heat-resistant metal. Wilmsmeyer does not explicitly teach a silicide strap comprising cobalt silicide. It would have been obvious to one of ordinary skill in the art to select cobalt for the refractory metal silicide, since cobalt is a heat-resistant metal.

Regarding claims 20 and 22, Wilmsmeyer does not teach a semiconductor device, wherein the dielectric spacer is silicon-rich. Silicon-rich oxides and nitrides are known and used in the art for several advantages, such as superior etch selectivity as compared to stoichiometric dielectric layers, as well as better protective properties. It would have been a matter of obvious design choice to incorporate a silicon-rich dielectric into the device taught by Wilmsmeyer since the properties described above are desirable.

Regarding claims 24 and 25, Wilmsmeyer does not teach a semiconductor structure, wherein the semiconductor region is implanted. It is well known in the art to implant areas of silicon where a change in conductivity is desired. It is a foundational principal in semiconductive devices. It would have been obvious to one of ordinary skill in the art to implant the silicon to achieve the desired conductivity, or to further reduce the resistivity of the silicide strap.

Response to Arguments

9. Applicant's arguments with respect to claims 19-25 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas W Owens whose telephone number is 703-308-6167. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

DWO
December 28, 2002

Steven Loke
Primary Examiner
